	PROGRAMME SPECIFICATION	Newcastle University

1	**Awarding Institution**	Newcastle University
2	**Teaching Institution**	Newcastle University
3	**Final Award**	MSc
4	**Programme Title**	Medical Genetics
5	**UCAS/Programme Code**	5123F
6	**Programme Accreditation**	
7	**QAA Subject Benchmark(s)**	
8	**FHEQ Level**	Masters
9	**Date written/revised**	October 2004

10	**Programme Aims**

This programme has been designed to provide basic and clinical scientists with an opportunity to develop advanced skills, conceptual understanding and knowledge in the field of medical genetics. The programme is set up to develop high quality research active individuals who, potentially, will feed into PhD programmes, industrial and health service activities locally, nationally and internationally.

The programme aims:

1 to produce postgraduates who have advanced knowledge and comprehensive understanding of contemporary Medical Genetics and related ethical issues.
2 To develop students' cognitive and transferable (key) skills (including effective communication, use of information sources, planning and organisation, working independently and in a team, problem-solving and original thinking) .
3 To produce postgraduates who have experience of research methods, critical evaluation and management at the forefront of Medical Genetics.
4 To encourage originality in the application and interpretation of current research in Medical Genetics.
5 To train students in those practical skills necessary to pursue a future career in Medical Genetics.
6 To produce postgraduates capable of working in a wide variety of careers at senior levels in circumstances requiring judgement, personal responsibility and initiative.

11	**Learning Outcomes**

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas. The programme outcomes have references to the benchmark statements for (subject) (X).

Knowledge and Understanding

On completing the programme students should:

The programme provides opportunities to develop and demonstrate:

A1   Advanced knowledge and understanding of Medical Genetics, including diagnostic tools, population genetics, molecular pathology and approaches to studying disease gene function

A2   Advanced knowledge and understanding of the human genome and bioinformatics

A3   Advanced knowledge and understanding of developmental genetics

A4   Advanced knowledge and understanding of ethical issues in Medical Genetics

A5	Advanced knowledge and understanding of genetic counselling
A6	Advanced knowledge and understanding of potential approaches in gene therapy
A7	Knowledge and understanding of research skills appropriate to Medical Genetics

Teaching and Learning Methods

A1	Is addressed through a mixture of lectures, computerised and other classroom exercises, critical appraisal of relevant research papers and small group discussion. This is supplemented with independent study directed by the provision of reading lists, and resource materials.
A2	Is addressed through a mixture of lectures, series of computerised exercises and independent study directed by the provision of resource materials.
A3	Is addressed through a mixture of lectures, student lead presentations and critical appraisal of relevant research papers. This is supplemented with further independent study directed by the provision of reading lists and other resource materials.
A4	Is addressed through a mixture of lectures and seminars, including student led debates. This is supplemented with independent study
A5	Is addressed through a mixture of lectures, seminars and practicals incorporating role play. This is supplemented with private study.
A6	Is addressed through a mixture of lectures, seminars and critical appraisal of relevant research papers. This is supplemented with further independent study directed by the provision of reading lists and other resource materials.
A7	Is addressed through a practical training course and an extended research project, supplemented with private study and individual tutorial support from Project Supervisor.

Assessment Strategy

A1	Knowledge and understanding of the subjects are primarily assessed by unseen written examinations. This is supplemented with extended essays, practical exercises, and oral presentations. Together these will enable students to demonstrate their factual knowledge as well as their ability to apply that knowledge. Formative feedback is given in seminars.
A2	The use of bioinformatics is formally assessed by unseen practical computer problem solving exercises. These will test their ability to use bioinformatics tools correctly as well as their ability to present the results in a clear and logical format. Formative guidance is offered in classroom based computer exercises.
A3	Is assessed primarily through unseen written examinations which will enable students to demonstrate their factual knowledge as well as their ability to apply this knowledge.
A4	Are primarily assessed through an extended essay which will enable the students ability to discuss ethical issues effectively. Formative assessment is offered in class seminars.
A5	Is primarily assessed by unseen written examination. This will enable candidates with different experiences to demonstrate their individual learning process and awareness of relevant issues. Formative feedback will be given following classroom exercises.
A6	Is assessed primarily through unseen written examinations which will enable students to demonstrate their factual knowledge as well as their ability to apply this knowledge. Formative feedback will be given in seminars and other classroom based exercises.

A7	Research skills are formally assessed through the writing up of practical work, and a research report. This will enable students to practice scientific writing as well as test their ability to put work into context. The poster will enable students to practice scientific writing in a different format and their selection and summarising of information and results will test their understanding. This will be supplemented by an oral examination which will enable understanding of the project work and scientific insight to be assessed. Formative assessment will be provided by research supervisors during the project work.

Intellectual Skills

On completing the programme students should be able to:

B1	gain experience of relevant biomedical and biomolecular experimental techniques
B2	gain experience statistical and informatics techniques relevant to research in medical genetics
B3	demonstrate an ability to critically appraise research evidence relevant to Medical Genetics
B4	an awareness of ethical issues in Medical Genetics
B5	an awareness of safety issues in Medical Genetics research
B6	an awareness of issues relating to Medical Genetic Counselling

Teaching and Learning Methods

B1	All aspects of the course are anticipated to highlight experimental techniques and approaches. Specifically the research projects enable students to gain first hand experience of laboratory techniques and an understanding of how research programmes are designed, implemented, adjusted and managed. Direction is provided by individual tutorials during the research project.
B2	This will be taught using a series of computerised exercises, supplemented with directed private study to consolidate the acquisition of techniques relevant to medical research.
B3	All aspects of the course are anticipated to encourage critical appraisal of research evidence, but the students will have chance to develop these skills in seminars and student lead presentations.
B4	Ethical issues are addressed through a mixture of lectures and seminars, including student lead debates. This is supplemented independent study guided by the provision of reading lists.
B5	Relevant safety issues are specifically highlighted in a seminar during the practical course and on an individual basis by tutors during the research project.
B6	Is addressed through a mixture of lectures, seminars and practicals incorporating role play. This is supplemented with private study.

Assessment Strategy

B1	Formative guidance is offered as an ongoing part of the research project and summatively assessed in the practical reports and research project report.
B2	These are formatively and summatively assessed through a series of computer based practical exercises.
B3	This is formatively assessed in classroom exercises and summatively assessed by

written unseen examinations and extended essays.

B4   These are formatively assessed by seminars. Summative assessment is provided in an extended essay.

B5   These are not summatively assessed, but formative guidance will be offered during students research projects, and will be apparent in their practice.

B6   This is summatively assessed in an unseen examination.   Formative guidance is offered in classroom exercises.

Practical Skills

On completing the programme students should be able to:
The programme provides opportunities to develop and demonstrate the ability to:

C1   problem solve, at both practical and interpretational levels

C2   debate ethical issues relevant to Medical Genetics

C3   critically appraise relevant research literature from a range of Perspectives

C4   critically evaluate own research

Teaching and Learning Methods

C1   All aspects of the course are anticipated to enhance problem solving skills. Practical problem solving will be specifically practised during the practical course and research project. Interpretational problem solving will be specifically practised during the critical appraisal of research papers, and during the research project.

C2   Ethical issues relating to medical genetics are a recurring theme throughout the course. Debating skills will be developed as a specific component during seminars.

C3   All aspects of the course are anticipated to encourage critical appraisal skills.

C4   Will be specifically developed in the extended research project following individual tutorial support.

Assessment Strategy

C1   Problem solving will be summatively assessed in numerous aspects of the course, including unseen written examinations, extended essays, computer based practical tests, and the research project report. Formative guidance will be offered by individual tuition during the research project, and through other practical and classroom based exercises.

C2   Debating skills will be summatively assessed in an extended essay. Formative guidance will be provided in classroom exercises.

C3   This will be summatively assessed in unseen written examinations, extended essays, and the project report. Formative guidance will be offered through classroom exercises and individual tutorials during the research project.

C4   This will be summatively assessed in the written research project report and by oral examination. Formative guidance will be offered by research project supervisors.

Transferable/Key Skills
On completing the programme students should be able to:
The programme provides opportunities to develop and demonstrate the ability to: D1   communicate effectively using both written and oral skills D2   Use of library and other information sources skilfully and appropriately D3   plan and organise work effectively D4   work independently or as part of a team as appropriate D5   solve problems D6   think originally

Teaching and Learning Methods

D1   will be developed throughout the course within an explicit conceptual framework, underpinned by formative feedback.

D2   will be developed throughout the course within an explicit conceptual framework, Underpinned by formative feedback.

D3   all aspects of the course are anticipated to encourage planning and effective organisation.

D4   will be specifically developed in the extended research project.

D5   will be specifically developed in the extended research project and through individual tutorial support. All aspects of the course are anticipated to encourage problem-solving.

D6   will be specifically developed in the extended research project.

Assessment Strategy

D1   This will be summatively assessed through formal unseen written examinations, extended essays, practical reports, and both the written and oral research project reports. Formative guidance will be offered during classroom and computer based exercises.

D2   This will be summatively assessed in the research project report, as well as extended essays. Formative guidance will be offered through computer based exercises.

D3   This will not be summatively assessed, but will be an intrinsic feature of the course. Formative guidance can be offered by personal tutors.

D4   These will not be summatively assessed, but will be intrinisic features of the course. Students will experience team work during the practical course and during their research project. Most other aspects of the course will require students to work independently.

D5   This will be summatively assessed in computer based exercises, extended essays, unseen written examinations, practical and research project reports and during the oral presentation of the research project. Formative guidance will be provided in classroom exercises and by individual tuition during the research project.

D6   This will be summatively assessed in the research project report. Formative guidance will be provided by individual tuition during the research project.

12   Programme Curriculum, Structure and Features
Basic structure of the programme
This full time one year taught masters level programme will provide broadly based research training in contemporary Medical Genetics theory, techniques and applications. The course has a modular structure and all modules are compulsory. 180 credits are required to complete the course. The taught modules are mostly 10 credits each, with one of 20 credits, while the research project is 90 credits. These require 100, 200 and 900 hours study respectively. The mappings are given in attached appendix 1.

Course overview

The course is aimed at both basic scientists and health service professionals who are interested in developing a career in medical genetics research or related activities in a health service or industrial setting. The teaching staff are either involved in high quality research programmes or are specialists in areas of health service provision (or both).

The importance of ethics in medical genetic research and practice is underlined by dedicating an entire module to these issues.

The research project will run for approximately 8 months, through semesters 2 and 3, and will provide a significant period of research training. Basic laboratory skills needed for the research project are covered in the practical course.

Modules

Generic research skills and basic subject knowledge:
1) Introduction to human molecular genetics and bioinformatics	10 credits
2) Molecular and cytogenetic diagnostics	10 credits
3) Practical molecular techniques	10 credits
4) Ethical & Sociological Issues in Medical Genetics	10 credits

Advanced Subject Knowledge:
5) Clinical Genetics + molecular pathology (including genetic counselling)	20 credits
6) Approaches to Disease Gene Function and molecular-based genetic therapies	10 credits
7) Medical Genetics within populations	10 credits
8) Developmental genetics	10 credits
9) Research Project:	90 credits

Key features of the programme (including what makes the programme distinctive)
We expect that students completing the Masters programme will have: 1. Gained advanced knowledge of contemporary Medical Genetics 2. Developed research skills relevant to the forefront of Medical Genetics 3. Developed cognitive and key skills which suit them to further research and/or employment in environments requiring judgement, personal responsibility and initiative. **Successful completion of the Masters' Programme** should enable students to:
1.   undertake research in Medical Genetics with limited further guidance. 2.   critically assess relevant research of their own and others and use this to direct further work in an original manner. 3.   be aware of safety and ethical issues relating to medical genetics
Programme regulations (link to on-line version)
http://www.ncl.ac.uk/regulations/programme/

13   Criteria for admission

Entry qualifications
A minimum upper second class honours degree in Genetics or related biological science degree, or has completed the fourth year of the Bachelor of Medicine and Bachelor of Surgery or Bachelor of Dental Surgery programme or the International Equivalent.

Admissions policy/selection tools
A candidate may be entered for the degree at the discretion of the degree programme director provided that such a candidate normally had the entry qualifications stated above, a strong personal statement and 2 good academic references.

Non-standard Entry Requirements
International Equivalents will be established on an individual basis in conjunction with the International Office. In exceptional circumstances, relevant work experience may be considered in conjunction with qualifications.

Additional Requirements
Not applicable.

Level of English Language capability
Students whose first language is not English must have an IELTS score of at least 7.0 to start the course.

14   Support for Student Learning

Induction
During the first week of the first semester students attend an induction programme. New students will be given a general introduction to University life and the University's principle support services and general information about the Institute and their programme, as described in the Degree Programme Handbook. New students will be given detailed programme information and the timetable of lectures/practicals/labs/ tutorials/etc. The International Office offers an additional induction programme for overseas students (see http://www.ncl.ac.uk/international/coming_to_newcastle/orientation.phtml)

Study skills support
Students will learn a range of Personal Transferable Skills, including Study Skills, as outlined in the Programme Specification.

Academic support
The initial point of contact for a student is with a lecturer or module leader, or their tutor (see below) for more generic issues. Thereafter the Degree Programme Director or Head of School may be consulted. Issues relating to the programme may be raised at the Staff-Student Committee, and/or at the Board of Studies.

Pastoral support
All students are assigned a personal tutor whose responsibility is to monitor the academic performance and overall well-being of their tutees. Details of the personal tutor system can be found at http://www.ncl.ac.uk/undergraduate/support/tutor.phtml
In addition the University offers a range of support services, including the Student Advice Centre, the Counselling and Wellbeing team, the Mature Student Support Officer, and a Childcare Support Officer, see http://www.ncl.ac.uk/undergraduate/support/welfare.phtml

Support for students with disabilities
The University's Disability Support Service provides help and advice for disabled students at the University - and those thinking of coming to Newcastle. It provides individuals with: advice about the University's facilities, services and the accessibility of campus; details about the technical support available; guidance in study skills and advice on financial support arrangements; a resources room with equipment and software to assist students in their

studies. For further details see http://www.ncl.ac.uk/disability-support/

Learning resources
The University's main learning resources are provided by the Robinson and Walton Libraries (for books, journals, online resources), and Information Systems and Services, which supports campus-wide computing facilities, see http://www.ncl.ac.uk/undergraduate/support/acfacilities.phtml

All new students whose first language is not English are required to take an English Language test in the Language Centre. Where appropriate, in-sessional language training can be provided. The Language Centre houses a range of resources for learning other languages which may be particularly appropriate for those interested in an Erasmus exchange. See http://www.ncl.ac.uk/undergraduate/support/facilities/langcen.phtml

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15 Methods for evaluating and improving the quality and standards of teaching and learning

Module reviews
All modules are subject to review by questionnaires which are considered by the Curriculum Committee. Changes to, or the introduction of new, modules are considered at the Board of Studies. Student opinion is sought at the Staff-Student Committee. New modules and major changes to existing modules are subject to approval by the Faculty Teaching and Learning Committee. N.B. The Medical Faculty Graduate School committee is the Board of Studies for this course.

Programme reviews
The Curriculum Committee conducts an Annual Monitoring and Review of the degree programme and reports to Faculty Teaching and Learning Committee via the Medical Faculty Graduate School.

External Examiner reports
External Examiner reports are considered by the Board of Studies. The Board responds to these reports through Faculty Teaching and Learning Committee. External Examiner reports are shared with institutional student representatives, through the Staff-Student Committee.

Student evaluations
All modules, and the degree programme, are subject to review by student questionnaires. Informal student evaluation is also obtained at the Staff-Student Committee, and the Curriculum Committee. The National Student Survey is sent out every year to final-year undergraduate students, and consists of a set of questions seeking the students' views on the quality of the learning and teaching in their HEIs. Further information is at www.thestudentsurvey.com/ With reference to the outcomes of the NSS and institutional student satisfaction surveys actions are taken at all appropriate levels by the institution.

Mechanisms for gaining student feedback
Feedback is channelled via the Staff-Student Committee and the Curriculum Committee.

Faculty and University Review Mechanisms
The programme is subject to the University's Internal Subject Review process, see http://www.ncl.ac.uk/aqss/qsh/internal_subject_review/index.php

Accreditation reports
Not Applicable

Additional mechanisms
Not applicable

16	Regulation of assessment

Pass mark
The pass mark is 50 (Postgraduate programmes)

Course requirements

Progression is subject to the University's Masters Degree Progress Regulations, Taught and Research (http://www.ncl.ac.uk/calendar/university.regs/tpmdepr.pdf) and Examination Conventions for Taught Masters Degrees (http://www.ncl.ac.uk/calendar/university.regs/tpmdeprexamconv.pdf). Limited compensation up to 40 credits of the taught element and down to a mark of 40 is possible and there are reassessment opportunities, with certain restrictions.

Weighting of stages
Not applicable
Common Marking Scheme

The University employs a common marking scheme, which is specified in the Taught Postgraduate Examination Conventions, namely:

Summary description applicable to postgraduate Masters programmes		**Summary description applicable to postgraduate Certificate and Diploma programmes**	
<50	Fail	<50	Fail
50-59	Pass	50 or above	Pass
60-69	Pass with Merit		
70 or above	Pass with Distinction		

Role of the External Examiner
An External Examiner, a distinguished member of the subject community, is appointed by Faculty Teaching and Learning Committee, after recommendation from the Board of Studies. The External Examiner is expected to:
       See and approve examination papers
       Moderate examination and coursework marking
       Attend the Board of Examiners
       Report to the University on the standards of the programme

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In addition, information relating to the programme is provided in:

The University Prospectus (see http://www.ncl.ac.uk/undergraduate/)

The University Regulations (see http://www.ncl.ac.uk/calendar/university.regs/)

The Degree Programme Handbook

Please note. This specification provides a concise summary of the main features of the programme and of the learning outcomes that a typical student might reasonably be expected to achieve if she/he takes full advantage of the learning opportunities provided. The accuracy of the information contained is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education.

Mapping of Intended Learning Outcomes onto Curriculum/Modules

Either

Intended Learning Outcome	Module codes (Comp/Core in Bold)
A1	**CMS8004, CMS8005, CMS8009, CMS8010**
A2	**CMS8008**
A3	**CMS8006**
A4	**CMS8007**
A5	**CMS8005**
A6	**CMS8004**
A7	**CMS8011, CMS8012**
B1	**CMS8011, CMS8012**
B2	**CMS8008, CMS8009**
B3	**CMS8005, CMS8008**
B4	**CMS8007**
B5	**CMS8011, CMS8012**
B6	**CMS8005**
C1	**CMS8005, CMS8008, CMS8009, CMS8010, CMS8011, CMS8012**
C2	**CMS8007**
C3	**CMS8005, CMS8006, CMS8008, CMS8011**
C4	**CMS8011, CMS8012**
D1	**CMS8004, CMS8005, CMS8006, CMS8007, CMS8008, CMS8009, CMS8010, CMS8011, CMS8012**
D2	**CMS8004, CMS8005, CMS8006, CMS8007, CMS8008, CMS8009, CMS8010, CMS8011, CMS8012**
D3	**CMS8004, CMS8005, CMS8006, CMS8007, CMS8008, CMS8009, CMS8010, CMS8011, CMS8012**
D4	**CMS8012**
D5	**CMS8004, CMS8005, CMS8006, CMS8007, CMS8008, CMS8009, CMS8010, CMS8011, CMS8012**
D6	**CMS8012**